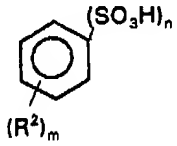
wherein R^1 contains from [1] 2 to 36 carbon atoms, or

an aromatic sulfonic acid having the formula



or combinations thereof, or

a metal salt of said alkyl sulfonic acid or said aromatic sulfonic acid, wherein m is an integer of 1 to 4, n is an integer of from 1 to 4, with the proviso that m + n is 6 or less, wherein each R^2, independently, is an alkyl having from 1 to 30 carbon atoms and optionally contains at least one halogen, nitro, alcohol, carbonyl, or carboxyl group thereon, or combinations thereof.

4 ~~17~~. (Amended) A process according to claim ~~16~~ 3, wherein said sulfonic acid is said aromatic sulfonic acid, or an alkali metal or an amine salt thereof, or combinations thereof.

REMARKS

Applicant thanks the Examiner for a telephone interview on April 28, 1998. Telephone conversants were Ron Kramer and Examiner Jeffrey Snay. Ron Kramer (the inventor) explained to Examiner Snay that there was numerous prior art references out there that teach the treatment of windshield wiper blades to decrease the coefficient of friction but this was the first application, to the best of our knowledge, which teaches trying to increase the coefficient of friction of a windshield wiper blade. Examiner Snay encouraged Ron Kramer to submit the prior art references to the Patent Office in the hopes that he could better advise Mr. Kramer of the extent of allowable subject matter in the present application. This was the sum and substance of the interview to the best of my knowledge.

Applicant has amended the claims to limit them to aliphatic and aromatic

sulfonic acids and salts thereof. This was in response to the Porter reference 4,045,838 which discloses treatment by inorganic acids for the purpose of decreasing the coefficient of friction of a windshield wiper blades. While this reference teaches away from the current application, which is trying to increase the coefficient of friction, it was deemed advisable to limit the claims to sulfonic acids to expedite the prosecution of the current application.

Windshield wiper blades are ordinarily molded from a variety of elastomers including natural and synthetic rubbers. It is well known and practiced in the prior art that after many types of blades are formed they are treated with a halogen, usually chlorine, for the purpose of hardening the surface of the rubber in order to reduce the coefficient of friction of the wiper blade on the windshield. It is also possible to reduce blade friction by treatment with an inorganic acid such as nitric acid or sulfuric acid. See Porter 4,045,838, Porter 4,256,683, Porter 3,997,935, and Overman 3,035,297. As explained in Danielson 3,861,950, the tacky surfaces, which form on newly vulcanized rubber articles, are believed to be due to surface phenomenon such as oxidative degradation or polymer reversion. Such sticky surfaces are a detriment, especially where the rubber article is a windshield wiper blade.

It is well known in the prior art that there is an optimum range of coefficient of surface friction for wiper blades. As stated in Porter 4,256,683 the coefficient of friction should be no greater than about 2.1 according to that applicant's Friction Test CFRP 113 as defined in Porter 4,045,838.

It is likewise well known in the prior art that as rubber ages and is exposed to the environment it can suffer a further, undesirable decrease in coefficient of friction which can cause the rubber to become too slick and too hardened to be useful. See Ross 3,591,410 and Charlesworth 2,622,038. As discussed in Wright, 1,114,841, rubber products are subject to hardening and deterioration in

resilient properties due to the inherent qualities of the rubber and to atmospheric conditions. Because of this they lose their frictional adherence or gripping contact which is essential for proper function, Wright, column 1, lines 18 to 32. With specific respect to wiper blades, Dale, 3,546,825 sought to rejuvenate blades by abrading off the old undesirable surface layer of rubber thereby exposing a fresh layer of rubber having, presumably, the proper frictional characteristics.

Once the coefficient of friction between the blade and the surface of the windshield becomes too low, streaking can increase due to the blade's increased tendency to ride over the water rather then pushing the water forward. It is the purpose of the present inventive process to increase the coefficient of friction of a wiper blade by treating the surface with the compositions referenced herein.

While Porter 4,045,838 discloses treatment of wiper blades by inorganic acids, it is for the opposite purpose of the present invention, and accordingly teaches away from it.

It can be seen by the above text that those skilled in the art of windshield wipers and related goods have considered a variety of treatments to windshield wiper blades, but have not considered applying sulfonic acids to used windshield wiper blades to increase their coefficient of friction. It is further seen that the application of acids to windshield wiper blades normally decreases the coefficient of friction and thus would not be deemed appropriate treatments (by those skilled in the art) to increase the coefficient of friction of a used windshield wiper blade. Based on these teachings it is hoped that the Examiner will drop his prior rejection of the claims under prosecution. These cited patents make the examiners §103 rejection inapplicable in that it is no longer reasonable to substitute the acid from Liddle into a rubber treatment for used windshield wiper blades.

Notice of Allowance of claims 13 and 15-20 is respectfully requested.

Respectfully submitted,

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